

McDowell Research Corporation

Capabilities Briefing

June 2001



McDowell Research Corporation - 300 South 8th Street - Waco, TX 76701

(254) 752-1411 - (254) 752-1812 (FAX) - info@mrc-power.com - www.mrc-power.com

McDowell Research Corporation

- **Alternate Power Systems**
 - Worldwide AC, DC and Battery Solutions
- **Communications Systems Integration**
- **Specialized Development and Manufacturing**
- **Small Business**
 - Capability and Capacity to react to customer driven requirements
 - Systems integration coupled with “black box” design
- **We do it quicker for less \$ and we guarantee it works!**



**PRC-117F
w/MRC-77**



PRC-119 w/MRC-33



PSC-5 w/MRC-50



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McDowell Research Corporation

A Power Solutions Company

- **Design and manufacture power solutions**
 - Tactical Radio power supplies
 - Encased integrated communications and power solutions
 - Installation kits for Tactical Communications
 - Battery chargers
 - Batteries
- **Markets Tactical Communications**
 - Harris tactical transceivers available on GSA
 - Harris authorized source for radio accessories



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MRC Product Characteristics



- **Products are designed to operate worldwide**
 - Compatible with worldwide AC/DC power sources
 - Products including a battery act as a UPS
 - Automatic battery charging part of those products
- **Product design expects worst case use**
 - Tested to all meet war fighters environments
- **Product designed for maximum cost savings**
 - Intended to replace non rechargeable batteries
 - Integrate or support Tactical radio operation



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McDowell Research

Product Commitment

We design and manufacture: Power Systems, Mounting Racks and Battery Chargers for tactical radios

Universal AC and DC inputs for worldwide use

- ... 95 to 260 VAC - Universal AC Inputs
- ... 11 to 36 VDC - Universal DC Inputs



Multi-Mode Multi-Chemistry Battery Chargers -

- ... NO PROGRAMMING REQUIRED
- ... BB-2590, BB-390, BB-490 and BB-590 capable



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POWER SUPPLIES AVAILABLE

AN/PSC-5 MBMMR	AN/PRC-117F	AN/PRC-150
AN/PRC-138	AN/LST-5	AN/PRC-119 SINCgars
AN/PRC-117 A-D	AN/KG-194A & KY-57/KY-99	AN/PRC-113
AN/URC-200	MST-20/HST-4	AM-50/AM-6000
AN/PSC-3	AN/PSC-10	AN/CSZ-1/SUNBURST

McDowell Research Corporation also developed specialized power supplies and adapters for other transceivers and rugged applications



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New Products from McDowell

- **Composite EnRoute Comm Rack**
- **RMT- 8 Power Supply**
- **MRC-67A Amplified Speaker**
- **Vehicle installation kits**
 - Tactical radios
- **MRC-34 Portable Communications System**
 - provisions for one tactical radio, speaker, antenna & CPU
- **MRC-65 Multi-Radio Operations Station**
 - Four radios, encryption devices, cables, speakers & antennas
- **MRC-2590 Re-chargeable Lithium-Ion Battery**



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New Product from McDowell

EnRoute Communications Rack

- **Integrate COTS equipment into light weight mobile rack**
 - Composite Rack - Designed for reconfiguration
 - Provisions for up to 3 Radios - User selectable (PSC-5, PRC-117F, PRC-138 or PRC-150)
 - Supports DAMA Amps for each Transceiver
 - ICS with interface to Cockpit radio control/w five ICS spigots (Wired or Wireless Interface)
 - Procure and integrate all hardware
 - Provide RF and Power interfaces
 - AC or DC Power Input
 - Empty Rack is 20 pounds
 - Size 36"H x 24"W x 20"D
 - Attaches to Aircraft Seat Tracks requiring one Troop Position
 - Can be configured for integration on vehicle, aircraft or boats



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COTS EnRoute Rack

Reconfigure for:

Fixed Wing/Rotor Wing Aircraft

Rib Boats/Patrol Craft

Wheeled and Tracked Vehicles

Shelter and Portable Base Station Systems



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New Product from McDowell

MRC-65 Multi-Transceiver Station

**Low Profile - One Operator -
Worldwide use**

**Developed with Mobile Comm Team at Coronado, CA
Transportable via commercial m**

- **Provisions for Four transceivers**
- **Provisions for Two Encryption devices**
- **Built in Racks**
- **Standard MRC-82 Power Supplies**
- **Readily usable with computers**
- **Rugged Composite Case w/rollers**
- **Storage for cables & antennas**



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New Product from McDowell

Portable Case System - MRC-34

- **Compatible w/commercial transport**
- **Tactical Operations Center (TOC)**
- **Worldwide Power usage**
- **One person carry**
- **Fixed Site, Aircraft, Vehicle Applications**
- **Operational with PSC-5, PRC-117F, PRC-138, PRC-150**
- **Compact Single Unit Package for easy transportation**
- **Multiple configuration possibilities with single package**



MRC-34 with PSC-5, MRC-50 and MRC-67



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New Products from McDowell

SatCom On the Move

- **Designed, delivered and installed OS-302 Kits for MARSYSCOM supporting Camp LeJuene, Camp Pendleton, Camp Hanson (18 systems total)**
- **Install for 4th ID Ft. Hood (Soft top)**
- **Install for 4th ID Ft. Hood (Hard top)**
- **Install 3rd SFG Ft. Bragg for Kuwait Exercise**
- **Install LAV for I MEF Camp Pendleton**

- **Passed NTC Test**
- **No co-site interference including EPLRS**
- **Passed Munson Road Tests**
- **Low profile antenna system**
- **HMMWV A1 and A2 variants with a single**
- **HMMWV Tailgate kit**



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MRC SOTM INSTALLATIONS



**HARD-TOP
INSTALLATIO
N**



**TROOP
CARRIER
INSTALLATIO
N**



**HMMW
V KITS
IN
WORK
AT MRC**

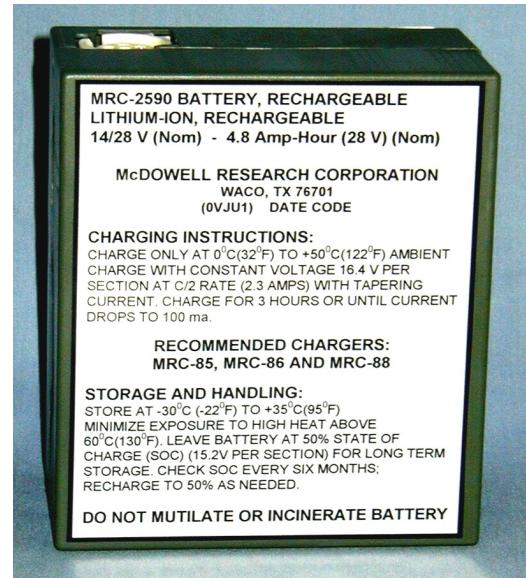


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RECHARGEABLE LITHIUM-ION BATTERY MRC-2590

- **90% OF BA-5590/U PERFORMANCE FOR 5% OF OPERATIONAL COST**
- **5 AMP/HR CAPACITY AT 28.8 VDC WHICH GIVES ADDED HEADROOM**
- **FLAT DISCHARGE CURVE PREVENTS EARLY TRANSCEIVER SHUTDOWN**
- **TOTALLY SAFE FOR TRANSPORTATION AS NO METALLIC LITHIUM USED IN CONSTRUCTION**
- **-30°C TO +60°C OPERATIONAL PERFORMANCE**
- **LOW INTERNAL IMPEDANCE ALLOWS 10 AMP OUTPUT FOR SHORT DURATION**
- **OPERATE PRC-117F OR PSC-5 FOR OVER 4 HOURS ON SINGLE BATTERY 10% DUTY CYCLE**
- **MRC-85, MRC-86 and MRC-88 MULTI-BATTERY MULTI-CHEMISTRY CHARGERS AVAILABLE**

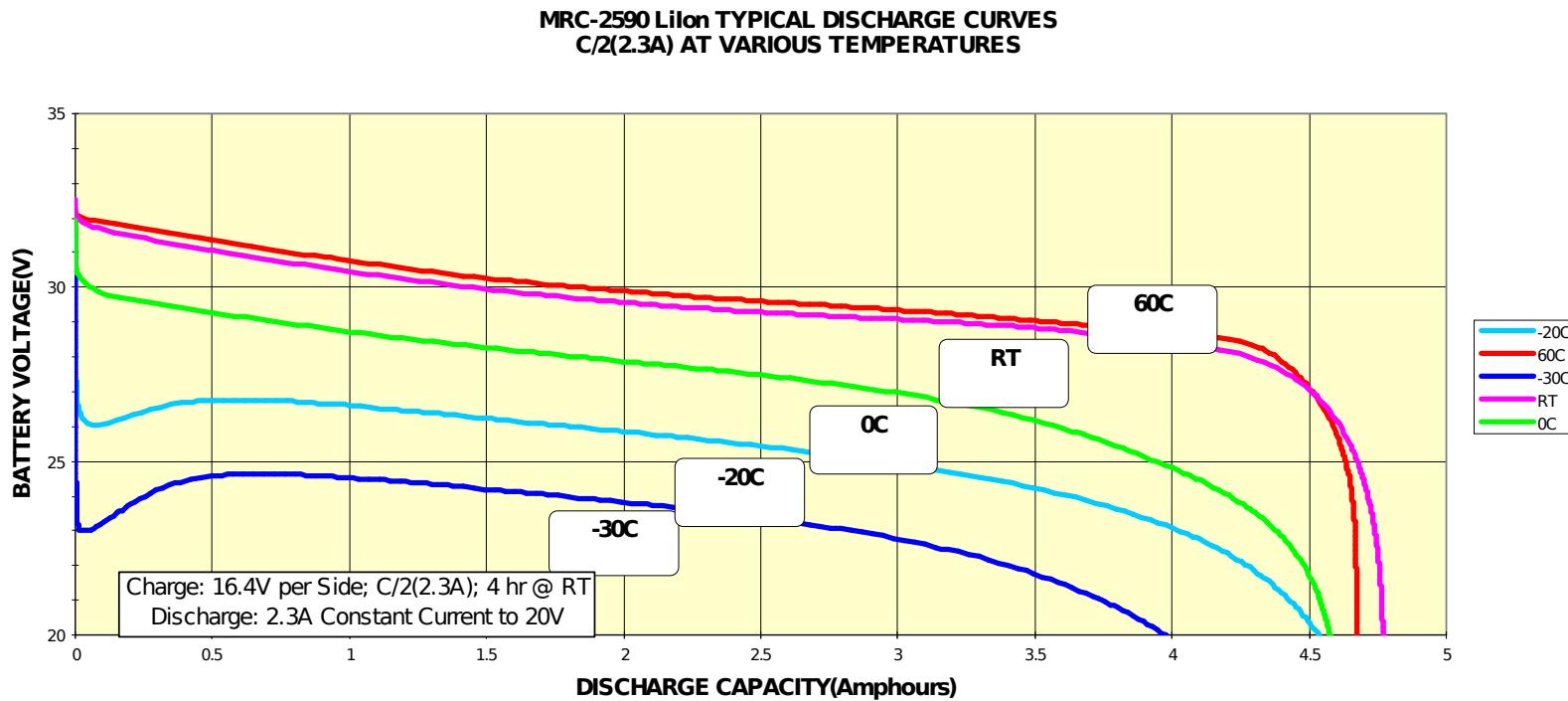


**MRC-2590 Rechargeable
Lithium-Ion Battery**
**Developed by McDowell
Research for DOD
Applications**



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MRC-2590 Rechargeable Lithium-Ion Temperature Performance Chart

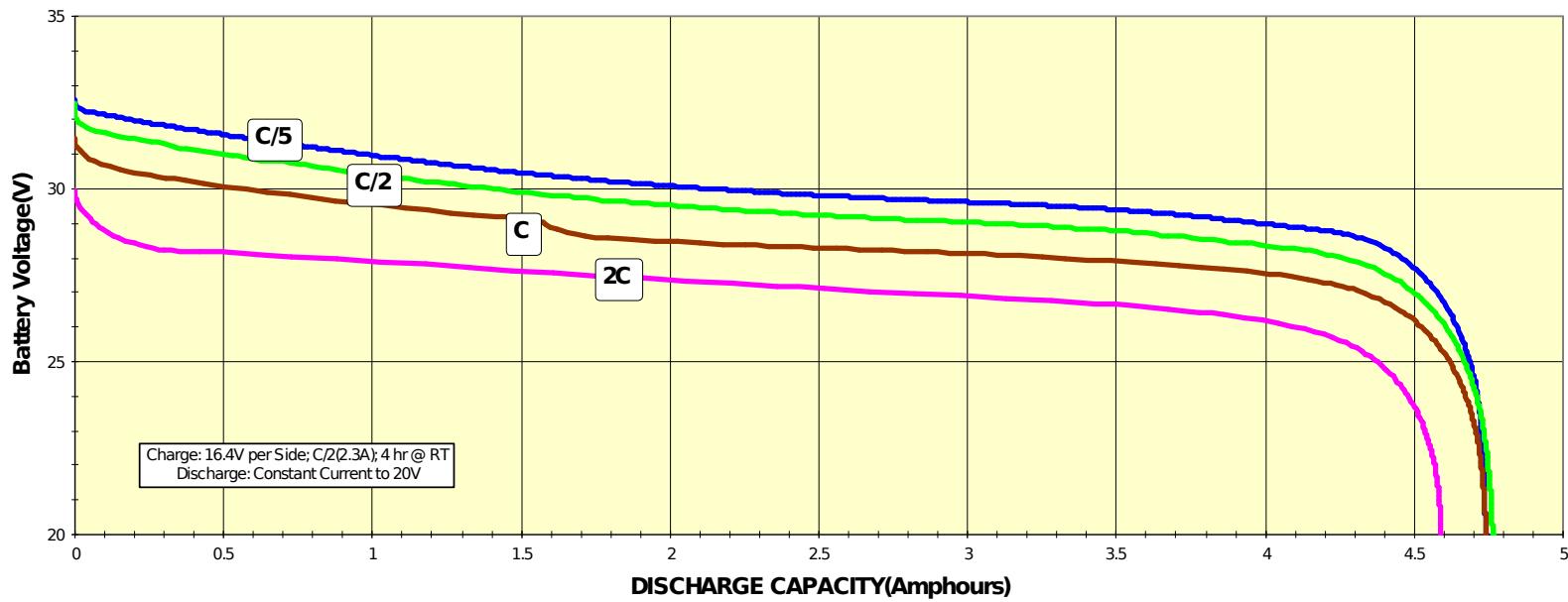


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MRC-2590 Rechargeable Lithium-Ion Discharge Curve versus Load

MRC-2590 LiIon TYPICAL DISCHARGE CURVES
Room Temperature C/5 to 2C Rate(C rate = 4.6A)



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MRC-2590 Rechargeable Lithium-Ion Operational Cost Comparisons

Transceiver	BA-5590/U Hourly Costs	MRC-2590 Hourly Costs	BB-390/U Hourly Costs	BB-590/U Hourly Costs
AN/PSC-5	\$12.29	\$0.70	\$2.54	\$1.60
AN/PRC-117F	\$12.98	\$0.74	\$2.68	\$1.68
AN/PRC-138	\$10.11	\$0.58	\$2.09	\$1.31
AN/PRC-150	\$12.04	\$0.69	\$2.49	\$1.56
AN/PRC-113	\$8.02	\$0.46	\$1.66	\$1.04
AN/PRC-104	\$14.10	\$0.81	\$2.92	\$1.83
AN/LST-5	\$9.05	\$0.52	\$1.87	\$1.17
AN/PRC-117 A-D	\$8.33	\$0.48	\$1.72	\$1.08
AN/PRC-119	\$4.65	\$0.27	\$0.96	\$0.60



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Product Commitment

MRC-85, MRC-86, MRC-38 and MRC-54 Battery Chargers

- **SAVES POWER DOLLARS - Lowers Battery costs**
- **Smart Unattended charging capability - AC or DC Input**
- The MRC case chargers/conditioners are self contained providing a reliable and consistent recharge of two or up to six batteries simultaneously in any combination of the following:

- **MRC-2590 - LITHIUM ION**
- **BB-390/U - NICKEL METAL HYDRIDE***
- **BB-490/U - SEALED LEAD-ACID**
- **BB-590/U - NICAD***
- **BB-690/U - SEALED LEAD-ACID**

***BUILT-IN CONDITIONING CAPABILITY**



MRC-54

Charger/Conditioner
Waco, TX 76701



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Product Commitment

MRC-88 and MRC-57 Vehicle
Mounted Charger

Designed to save operational dollars

Smart charger - Usable in all 24 VDC vehicles

- **Five battery charger**
- **Supports the following batteries**

MRC-2590 - LITHIUM ION

BB-390/U - NICKEL METAL HYDRIDE*

BB-490/U - SEALED LEAD-ACID BATTERY

BB-590/U - NICAD BATTERY*

BB-690/U - SEALED LEAD-ACID BATTERY

***BUILT-IN CONDITIONING CAPABILITY**



**MRC-57
Charger/Conditioner**



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MRC-82 POWER SUPPLY

- WORLD-WIDE OPERATION FROM AC OR DC POWER SOURCES
- INTERNAL MRC-2590 RECHARGEABLE LITHIUM-ION BATTERY
- OPERATE TRANSCEIVER FOR OVER FOUR HOURS FROM SINGLE BATTERY OPERATION
- AUTO SHUT-OFF TO PREVENT INTERNAL BATTERY FAILURES
- SAFE FOR ALL TRANSPORTAION MODES
- DEVELOPED FOR NEW HIGH CURRENT REQUIREMENT TRANSCEIVERS



**PRC-117F with MRC-82, RMT-2
and MRC-67**



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McDowell Product Commitment

PSC-5, PRC-138, PRC-150 & PRC-117F



**PSC-5 with MRC-50,
RMT-2 and MRC-67**

Vehicle Installation Solution

- **MRC-50, MRC-77 or MRC-82 with RMT-2 Mount**
- **Self contained power system**
- **Integral charger and battery with MRC-82 and MRC-50 Supplies**
- **Adjustable radio rack**
- **MRC-67A Amplified Speaker**



MRC-50



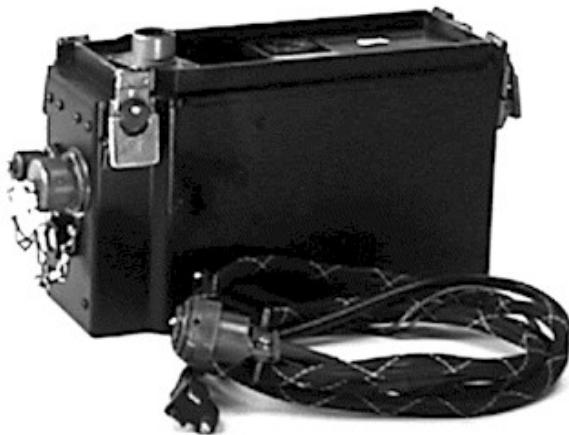
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McDowell Product Commitment

MRC-33 SINCGARS Support

- **REDUCE OPERATIONAL COSTS**
- Self contained power system for AN/PRC-119 Radios
- Integral charger and battery



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McDowell Product Commitment

MRC Power Solutions



- **PSC-5 - Joint Service supplier**
 - MRC-50, MRC-32, RMT-2, MRC-67A Amplified Speaker
- **PRC-117F - Support products**
 - MRC-77, MRC-82, RMT-2, MRC-67A Amplified Speaker

Tactical Satellite Radio installation Kits



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New Product from McDowell

MRC-67A Amplified Speaker

- **Embedded 5 Watt Audio Amp**
- **Automatic Muting w/handset attached**
- **Handset always functional**
- **Volume Controls**
 - Speaker and Handset
- **Adaptable to existing equipment**
- **Waterproof Construction**
- **Supports all Transceivers**
- **100 Foot Remote Operation**



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McDowell Product Commitment

MRC-74/RMT-8 Power Supply

Low Cost High Current Supply

- **Garrison, Vehicle and Airborne Radio Racks supporting:**
 - PSC-5, PRC-117F, PRC-150 & PRC-138
- **53 Amps with 95 to 260 VAC, 47 to 440 Hz Inpu**



**MRC-74
Power Supply**



Power for vehicle mount rack variants

RMT-8 field proven in TACP Rack

**RMT-8 Power
Supply**



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SPECIALIZED CABLES and SUPPORT EQUIPMENT



PC-25F COMPUTER BATTERY POWER CABLE



PC-90 BATTERY INTERFACE CABLE



PC-20 COMPUTER INTERFACE CABLE



PC-12 SIDS POWER CABLE



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McDowell Research Commitment



Home Offices

Separate On-Site
8,000 sq.ft.

Vehicle Integration
Facility



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In-House Test Facilities



Environmental Stress Screening Chamber

Heat and Cold Cycling

Random Vibration Cycling

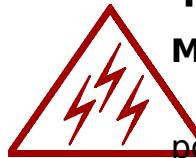
Computer Controlled

EMI/EMC Test Chamber

**Emission Frequency Range - DC to >1
GHz**

**Susceptibility Frequency Range - DC to >
1GHz**

Computer Controlled



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Manufacturing Support Equipment



CNC Milling Center

- **PMC-5VT20 -3 Axis Machine Center**
- **High Speed Automatic Tool Changer**

Wire and Cable Equipment

- **Cutting and Marking**
- **Connector and/or open end**
- **Labeling**
- **Shielded and Non Shielded**



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McDowell Customer Commitment

Key Benefits

- **Small Business**
- **Flexible**
 - **Quick Response**
 - **Work done in-house**
- **Low Overhead**
- **Support Users with designs developed for special requirements**
- **Many items assigned NSN - available directly from MRC using PO or Credit Card or via GSA**
- **We do it quicker for less \$ and we guarantee it works!**



MRC-34 SYSTEM



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